UNIVERSITY OF MINNESOTA COMPUTER CENTER
Deadstart Systems Newsletter

25 January 1977 Vol. 3, No. 2
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## NOTICE OF CHANGES TO THE SYSTEM

### Regarding the Last New System - by T.W. Lanzatella

The last new system installed at UCC was noteworthy for the uncommonly large number of bugs installed with it. We have, in the past, installed larger changes with fewer mistakes and smaller changes with more mistakes. I present here a brief, clinical description of all bugs which were noticed and repaired.

1. Following the new system installation, COBOL failed to load correctly. The problem was located, and the new overlay-load-by-name option in LDR was removed. The net result being 1.5 hours of all COBOL jobs failing.

2. On 14 January, the LIMITS command was noticed to be generating two different styles of report. The problem was due to the secure password entry enhancements and was judged noncritical. The bug will remain in the system until the next tape is installed.

3. On approximately 20 January, the PASSWOR command was found to be malfunctioning if a user chose secure password entry. The problem occurred randomly, and the feature has not yet been announced to users, hence the problem was judged noncritical and will remain in the system until the next tape is installed.

4. Shortly after the system was installed, ROLLOUT commands were discovered to randomly abort with CPM ILLEGAL REQUEST. The error only affected time sharing users and only after a large amount of connect time had accumulated. The problem was judged noncritical.

5. Multiple log-off requests caused 1TA to hang. This is the only bug which caused any down time. The bug proved difficult to find, and the old system was even reinstalled on the 6400 as a result. The problem caused more trouble on the 6400 due to the increased frequency of multiple log-off requests. The bug was judged critical and was finally repaired on 21 January.

6. The DSD MAINTENANCE subsystem proved to be an unacceptable drag on time sharing response time. This was caused by an extra PP overlay load every time 1SJ, the job scheduler, was called--even if the subsystem was disabled. The problem was judged noncritical but the entire MAINTENANCE subsystem will be removed with the next system.

//////////

Tim Salo provided the source form of a critical modification to 1CD, the card reader driver. N.L. Reddy originally wrote the modification in September, 1976, after a rash of system crashes caused by 1CD (see DSN 2,18 p. 13). Since that time, the mod has been lost, and we have been running with only a binary version of 1CD. Tim's reconstructed version reorders the processing of card reader compare errors avoiding a 1CD memory wipeout. Tim also installed the basic minicomputer terminal protocol into SUPIO. The basic protocol includes only INPUT/OUTPUT with few commands. This code was tested in the normal system on Sunday, 16 January. Additionally, SUPIO now uses an improved version of the R= macro developed by D.R. Lienke.

Bill Elliott contributed the following changes.

1. A LABEL command will now abort if the tape specified is requested in write mode and has an evaluation request pending. This change was necessitated by the addition of automatic tape cleaning and evaluation (see DSN 2, 19 p. 5). The check prevents a user from writing on a tape only to have the data destroyed by the evaluation.

2. Bill corrected a minor problem in MODVAL preset code which caused the LIMITS command to provide two types of report. Depending on the value of certain central memory words, one report was the usual LIMITS output, the other was similar to a MODVAL(OP=S) report. The problem was a result of installing the secure password entry feature (see DSN 2, 23 p. 3).

3. Bill repaired another bug in MODVAL which resulted from the secure password entry feature. The problem was in PASSWOR processing and occurred if both passwords were entered securely (using a blanking sequence). The result was that a user received a new password of INPUT or OUTPUT depending on memory. Additionally, the secure password entry feature was documented throughout the system.

4. Program EXPLIB now uses the CPM VALID function to convert from UN to UI rather than the UFM function.

5. A bug in EXAMINE involving the F=SI option was fixed.

Bob Zalusky provided a new version of LISTVAL which uses the CPM VALID function and which restricts use to SYOT jobs only. Bob also repaired 1CD to properly account for punched header cards thus giving an appropriate account file message if a user disposes a null punch file.

Don Mears changed the TELEX time sharing termination message to indicate CP time rather than SRU's used. This change will make many users happy. Don also contributed a new version of the console game STARWAR.

Bill Wells installed a small change to the DSD K-display driver which will allow dollar signs ($) to be displayed. The change is necessary in order to install a K-display for NOTICE/NOTIFY. Also for NOTICE/NOTIFY, four new bits were added to the TELEX terminal table (see DSN 2, 23 p. 5).

Kevin Matthews repaired a problem in 1TA log-off processing which caused several system hangs on the 6400. The problem arose due to a bug in some performance measurement code and only occurred after a multiple log-off request. The PMS code rendered the 1TA log-off overlay non-reentrant while other 1TA overlays treated it as if it were reentrant. Kevin also repaired a timing problem between 1AJ issuing a dayfile message and a CPU program issuing a dayfile message. The problem was observed chiefly with the COST command and resulted in some COST messages appearing in the dayfile before the COST command.

Jim Mundstock installed some sweeping changes to CALLPRG.

1. The FETCH, FUTURE and PAST commands now process multiple arguments (see DSN 2, 19 p. 7).

2. User services' proposed changes to the WRITEUP command were installed (see DSN 2, 21 p. 2). These changes render the new WRITEUP command non-upward compatible. A new WRITEUP writeup has been produced and will be advertised before the system is installed. Also, WRITEUP index change procedures will change with this system. Brian Hanson wrote a special interactive program so that staff can update the index. Staff will be notified via NOTICE as to the program usage instructions.

3. Writeups can reside on tape.

4. MERITSS users can obtain writeups from the CYBER 74 via XMIT.

PROPOSED CHANGES TO THE SYSTEM

A New DAYFILE Option - by J. Larsen/T.W. Lanzatella

John Larsen proposes that a new parameter be allowed on the DAYFILE command which provides the option of printing the user's dayfile backwards. The usefulness of such an option is clear. Users are most frequently concerned with the most recent dayfile entries and currently must execute about five commands to achieve the equivalent action. The new parameter should be allowed anywhere after the file name argument and could be called the B option.

//////////

The SUBMIT /READ Directive - by B. Elliott

With the installation of the /USER edit directive into SUBMIT, the approved /GETUSER was not installed, since, as it was pointed out, the /READ directive

(now existing) could be used instead with less confusion. The /GETUSER directive had the ability of specifying a packname thus allowing the file to be on an auxiliary device (PF01, STF, etc.). I propose then, to add a packname argument to /READ resulting in the directive form:

/READ,lfn,packnam.

Such a form will be useful to those users using removable or public auxiliary devices.

//////////

New COST Options - W.J. Elliott

I propose to add several new options to the COST command which would designate an indirect permanent file name which would be used by COST to append job cost information. To maintain compatibility, the commands

COST.
COST,any unequivalenced parameter.

would retain their current action. The proposed form of the command is:

COST,[U or C],FN=pfn,UN=usernum,PN=packnam

where:

C implies commercial rate
U implies University rate (default)
FN file name to which cost information is appended
UN alternate FN usernumber
PN packname (PN=0 default).

Parameters are order independent. For a lengthy period following installation, any unequivalenced parameter will result in commercial rate calculation. The information appended would be in the form:

| DATE | TIME | USERNUMBER | JOB NAME |
|---|---|---|---|
| PF accumulator | | cost | |
| MT accumulator | | cost | |
| MS accumulator | | cost | |
| SRU | | | |
| TOTAL DOLLAR COST. | | | |

All lines would be written even though some accumulators might be zero (MT) to facilitate processing by user written routines.

//////////

A New SYSTIME CMRDECK Directive - by W.J. Elliott

I propose addition of CMRDECK directive, SYSTIME, which will toggle a bit in the SSTL word to enable KCL statements and CP programs to determine whether or not the job is being run on system time. This would be very useful within SYSPROC which currently uses elaborate hour calculation or permanent file status to determine system time.

Additionally, it would be useful for some CP programs (TAPES specifically) which should prohibit certain options during systems time (Reserve and Release).

If possible, that portion of the SSTL word which is currently transferred to RA+67 should contain this system-time bit. This would prevent extra RSB requests especially in CONTROL.

I suggest KCL additions as follows:

```
IF(SYSTIME) -
IF(DEBUG) -
IF(ENGR) -
IF(LOWRATE) -
```

If deemed necessary for security reasons, IF(DEBUG) could always return a FALSE value unless the job is system origin, in which case, the actual condition would be returned.

//////////

Field Length Corrupts; Absolute Field Length Corrupts Absolutely - by D.W. Mears

Do you like wasted computer resources? Do you like bad response time? Of course not, no responsible computer manager or analyst does. Well, then join the ever-increasing number of people who are voting in favor of this proposal.

I propose that when LDR loads a (0,0) level overlay or an ABS program, it should reduce the field length to the absolute minimum value possible for which the program will execute successfully. This will insure that the user of absolutes will get the best possible response time and save the system the overhead of rolling ever so many extra sectors of unused, undesired, accidentally acquired, desperately needed by others, expensive but not charged for (and thus paid for by your hard-earned tax dollars) central memory.

To achieve this, LINK and CYBER LOADER will have to be altered to put the FL required to run into a table at the beginning or at the end of any generated (0,0) overlays if *REDUCE,-.* has not been selected, there is no *LOADER* entry point, and there are no higher level overlays which follow. I suggest a table of the form:

```
12/5600,12/0,36/field length
```

be placed at the end of the overlay generated.

Then, change LDR to look at this table and if *REDUCE,-.* is not in effect, reduce the field length to the specified value before transferring control to the program. Also, if *REDUCE,-.* is not in effect, on the load of an ABS program LDR should search for the RFL= entry point and set the field length to the specified value.

Note that this mod should have no adverse effect on existing absolutes since existing overlays have no runtime field length table, no field length reduction will take place. On ABS programs RFL= is only used to specify required runtime field length.

The only problem this mod will create will be that non-multi level overlay packages which require that the field length not be reduced must have *REDUCE,-.* in effect when the overlays are generated.

This is no frivolous new feature to be used by one or two users who have inside contacts at UCC, but a worthwhile change designed to really improve system performance, improve response time, and make it easier for users to use overlays and ABS programs correctly.

//////////

A New KCL Function - B. Zalusky and J. Strait

Better KCL is something we all ( I hope) would like to see. A new KCL directive I propose to implement is the PFILE function. This function is similar to the current FILE function except that it will let you interrogate permanent file CATLIST information.

The format is as follows:

PFILE(PFN/UN/PN,<EXPRESSION>)

where
PFN = Permanent File Name
UN = Usernum to Search for File (May be Null)
PN = Pack on which File Resides (May be Null)

The expression is any valid KCL expression but with a different list of symbolic names.

Symbolic names and definitions:

Names with Values:

| | |
|---|---|
| LN | Length of File in PRUS |
| AC | Access Count on File |
| C | Category of File |
| M | Mode of File |
| DN | Device File Resides On |
| SS | Subsystem Associated with File |
| AD | Date of Last Access |
| MD | Date of Last Modification |
| CD | Date of Creation |
| AT | Time of Last Access |
| MT | Time of Last Modification |
| CT | Time of Creation |

Names which have True/False Values:

| | |
|---|---|
| PF | File is a Permanent File |
| IA | File is Indirect Access |
| DA | File is Direct Access |
| PR | File is Protected |
| PW | File has a Password |

//////////

Access to the Control Statement File (Again) - B. Zalusky

I previously proposed to allow the Attach Control Statement File function to the users (see DSN 3, 1). After some discussion it was noted that setting the PP Drop Files bit was insufficient due to the situation where one could enter a new Control Statement File and still have his old file pointing to disk tracks which now no

longer point to valid disk tracks allowing reads to a random end of information. In addition to setting the PP Drop Files bit I would like to set all Control Statement Files currently attached to point to the tracks of any new Control Statement File.

SYSTEM MAINTENANCE: People and Procedures

Last Week's Systems Group Meeting - by T.W. Lanzatella

1. The following proposals were accepted or rejected.

   a. Bob Zalusky's proposal to reinstate the Attach Control Statement File function as a user callable function was defeated (see DSN 3, 1 p. 3). Don Mears pointed out that Bob's proposal failed to address the situation in which a user calls the Enter Control Statement File function. Here again we have the problem of a FNT entry with no tracks assigned and accessible to the user.

   b. Bill Elliott's proposal to study the possibility of moving DSD hour update code into MTR was approved (see DSN 3, 1 p. 3).

   c. Bill Elliott's proposal to allow PFM to use a central memory buffer for transferring indirect access permanent files was approved in principle (see DSN 3, 1 p. 4). We decided that Bill should perform a study to determine the optimal CM buffer size.

   d. Bill Elliott's proposal to modify CATLIST to indicate the number of free tracks remaining on a private pack was approved (see DSN 3, 1 p. 4). We altered the proposal so that free tracks remaining will always be output whenever CATLISTing a named device and free space remaining will be given in tracks and sectors.

   e. Bob Williams' proposal to alter the format of the DSD STOP command in order to reduce the number of times TELEX is dropped accidentally was defeated (see DSN 3, 1 p. 4). We decided to deal with the problem administratively. This will be done by enabling MAGNET in the 6400 IPRDECK and directing MAGNET to control point 5. MAGNET will then run at control point 5 after an AUTO command. Hopefully, 5.STOP is sufficiently different from 1.STOP to solve the problem.

   f. Bob Williams' proposal to alter the way TELEX treats the MA and MI parameters from the EXECUTE subsystem was partially accepted (see DSN 3, 1 p. 4, 5). The PASCAL field length scheduling value will be reduced to 52K from 55K. Additionally, the MA and MI parameters will always be used independently of any previous values. The suggestion to always calculate the field length scheduling value based on the assumption that the file to be executed is an absolute overlay was defeated until further study is performed on the effect of the change to novice users.

2. N.L. Reddy reported on VIM 25.5 (closed committee meetings). He has a set of notes if you are interested. N.L. Reddy left W.J. Elliott in charge of his system time during his absence. Bill will be gracing the computer room from 4 a.m. to 8 a.m. Tuesday and Thursday and from 7 a.m. to 12 noon on Sunday.

3. L.A. Liddiard reported that work will soon begin on a new time sharing COBOL. The objective is to rework a 56K version of COBOL 4 into a 40K product. E.J. Mundstock will be doing the work. Jim says he will need 1.5 months of hard work (Larry says 6). [NOT TRUE RT]

4. L.A. Liddiard announced that he will soon be installing GET,SAVE and REPLACE functions into BASIC.

5. T.W. Lanzatella reported that 3 new high speed (30 cps) lines and 2 new low speed (10 cps) lines will be added to the MIRJE time sharing network. Staff will be validated for one additional access on the high speed rotary.

6. Several staff members surmise that the recent security breach may have occurred because of a somewhat lax attitude about user usage of the system during system time. We decided to write a special procedure to prepare an abbreviated VALIDUZ for use during systems time.

7. Dennis Lienke's proposal to enhance the CALLPRG FETCH command was voted down (see DSN 2, 19 p. 7; DSN 2, 20 p. 7; DSN 2, 21 p. 5 and DSN 2, 23 p. 7).

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System Strategy Committee - 77/01/12 - by T.W. Lanzatella

1. DROP/NODROP file ID

   We decided to assign 70B to the DROP/NODROP file ID. We will generally stick to those ID's above 70B for special purposes such as DROP/NODROP and leave the interval $0<ID\leq 67B$ for SUPIO type ID's.

2. XMIT/SEND (or the Meeting of the Minds)

   For several months, the topic of revising XMIT/SEND to a unified product has plagued the SSC. On 22 October 1976, NLR promised to deliver a proposal for a unified (symetric) XMIT/SEND. But due to an excessive workload, the proposal was never written. NLR stated that his superiors felt the amount of work necessary to write the XMIT/SEND proposal was not justified in the light of his other projects. This prompted the other SSC members to ask, "What could the proposal contain to require so much time and effort?" NLR replied that naturally, such a proposal should describe a totally general, multi-mainframe environment. MMS explained that it was not our desire to completely generalize XMIT/SEND, only to eliminate the unesthetic need for different control statements on different machines supposedly running identical operating systems. NLR said this was an acceptable enhancement. An undergraduate could easily write an XMIT/SEND proposal to achieve this end. We quickly outlined the desired change:

   a. XMIT output file should be a DISPOSE function.
   b. XMIT job should be a SUBMIT function.
   c. SEND permanent files should work identically on both machines.

   Bob Zalusky was chosen to write the initial proposal. We assume that other staff members will have further suggestions, but the ball is rolling finally.

3. XMIT/SEND WRITEUP

   NLR had also failed to install an XMIT/SEND writeup as he promised on 22 October 1976. Bob Williams will prepare an XMIT/SEND writeup.

//////////

Staff Tape Reservation Pool - by W.J. Elliott

YZE account numbers may now reserve a 7- or 9-track tape from the staff reservation pool. Currently about 30 9-track and 30 7-track reels are available. Reservation is accomplished using:

TAPES(RESERVE, . . .)

A complete description of additional arguments is available in WRITEUP(TAPES).

The following rules currently apply to staff pool tapes reserved under this system.

1. The physical reel is never to be removed from the library except by the Librarian. In most cases, pool tapes are of a very high quality and value.

2. Reserve tapes are pre-labeled and should never be blank labeled or scratch labeled by systems staff or operator unless so directed by the Tape Librarian.

3. Pool tapes must not be reserved during system time. The reservation will not be properly recorded since a different express file is used than on the production system. Reserve your tape on the production system before you use it on systems time.

4. The reserved reel will be automatically reclaimed by the system after one month has elapsed and no access has been made for the last seven days up to a limit of three months. Thus, conceivably, a reserved reel can remain assigned indefinitely if in active use. A notification system is being developed to inform you when you have entered this seven-day grace period.

5. When you have finished with the reel, you can return it to the pool by executing:

   TAPES(RELEASE,VSN=vsn) control card.

   As is evident, the tape pool is intended to be an active pool. Feel free to reserve tape for as little as a few days use, but release the reel when you no longer need it.

The rules and policy set forth above are interim ground rules which may be modified if required. Results of this test period will help determine the feasibility of a user reserve pool. Your comments and suggestions are, of course, welcome. Please direct them to Bill Elliott.

//////////

System Time Notes - by K.C. Matthews

The arrival of the three new 844-41 drives caused some packs used on system time to be moved. The following drives are now powered up on system time.

All five single density drives are up. There are four in front of the computer room, and one at the far right in the back. The far left drive in front belongs to the 6400. It should not be powered up or down by people working on the CYBER.

The next two drives, 5A and 6A, leave STF and SP mounted. Drive 7A in front has a removable pack mounted during normal operations, and the system time DN=30 during system time. Drive 7B normally contains removable pack SYSTEM.

The far left double density drive contains scratch pack UCC. This drive is normally mounted during system time. All the other double density drives should be powered down. These facts are documented in a writeup inside the deadstart panel door.

The system time pack was destroyed again this weekend during permanent file dumping and loading. In hopes of preventing this from happening again, the system time pack now has device number (DN) 30 and a family name of SYTIME. The family name is needed when logging in. In response to the message

FAMILY:

enter SYTIME.

In hopes of preventing future system time password grabbing, the following procedures have been adopted.

When it is necessary to move a regular VALIDUZ file to the system time, enter under normal operations

X.CALL(U(P=VALCOPY)

This uses a program COPYVAL to copy the files VALIDUZ and VALINDZ to pack STF. Then under the system time system, enter

X.CALL(U(P=SYSVAL)

Procedure SYSVAL takes the files from STF and installs them on the default family pack.

In copy file VALIDUZ, program COPYVAL makes a few changes. All staff numbers are set closed. All non-staff numbers are set closed, have the account-to bit cleared, and have the password changed to commas and periods. Procedure SYSVAL opens up a few of the staff account numbers. The rest must be opened from the console with MODVAL as follows:

```
X.MODVAL.          (Locate the control point at which MODVAL is
                    running.)
K,N                (N is the MODVAL control point number.)
K.U,USERNUM        (USERNUM is your user number.)
K.AW=COPE
K.END
K.END
```

//////////

CALLPRG and Library Tape News - by T.W. Lanzatella

Very few changes have been introduced through the library tape or through the CALLPRG index over the last several weeks. John Strait added a new future version of PASCAL and PSCLIB while the old future version was moved to current on the library tape. This change took place on 9 January.

Clive Schofield added a new version of FETCH type MNF which uses MSU record manager.

On 6 January, S.P. Yen installed a new version of SPSSONL.

On 18 January, K. Fjelsted installed an updated version of MPOS.

//////////

Cyber 74 Deadstart Dump Analysis - by K.C. Matthews

Monday, 10 January 1977 - Sunday, 23 January 1977

Monday, January 10

10:03 An attempt was made to run the CERTIFY program which has not been run since we installed level 10. It didn't work and hung the system. Don't use CERTIFY. It should either be fixed or removed from the deadstart tape.

Thursday, January 13

09:50 Power surge during the Systems Group meeting caused both machines to go down.

Tuesday, January 18

The system was not up until 08:36 because of an ECS problem.

Wednesday, January 19

20:14 (DD-6)
The system was simply hung. Most PPU's were executing monitor functions. Analysis revealed that PPU's were trying to do Monitor Exchange jumps (MXN) to get CPUMTR going, but that the jumps were not being taken. This normally happens when a PPU tries a CPUMTR monitor function, and the CPU is already in monitor mode. The PPU then simply tries the exchange jump again. In this case, the PPU's never seemed to get CPUMTR going. The CPU was executing the idle program, which we hope was in program mode. The problem is still being studied.

20:29 (DD-7)
Same problem as above.

22:45 (DD-10)
The system hung again; this time CPUMTR was hung in a loop we added to prevent word 24 B from being cleared. This word, which contains the recall time, was being zeroed when we had some level 3 deadstarts earlier last year and last summer. The subroutine UXS in CPUMTR was modified to hang in case it was called to operate on control point 0 (which would clear word 24). It finally did hang. But the exchange package is very confusing; we haven't yet found out why this subroutine was called. There may have been an earlier accident in CPUMTR which caused this one.

Friday, January 21

03:40 (DD-11)
1TA hung when TELEX was stopped for the night. The problem was caused by KCM's attemp to solve a problem he introduced on the last deadstart tape. It caused 1TA to hang whenever a block log-off was being processed. The problem has (I hope) been fixed.

The original 1TA problem caused several hangs on the 6400. The problem is that 1TA is written so that its overlays are re-entrant. This speeds

things up when 1TA has several requests to process. Unfortunately, overlay 3TD which processes a log-off, was not re-entrant on the last tape. It jumped to some code which was later over written by a buffer. This caused the second entry to 3TD to be disastrous. The problem showed up on the 6400 first, because the greater the number of terminals, the greater the likelihood of two log-offs occurring together.

15:54 (DD-12)
A tape channel was hung up for several minutes before it was disconnected. When it was disconnected, 1TA hung. Apparently, TELEX was trying a block log-off in order to recover from an abort caused by the long period of PPU inactivity caused by the tape channel. This caused 1TA to hang because of the problem described above.

//////////

Play It Again, Sam or 6400 Deadstart Dump Analysis - by R.A. Williams

| DATE | DESCRIPTION | TAPE |
|---|---|---|
| 770113 | A power failure caused the system to go down, and FN (function) error dayfile messages for the 803 disk, when the system was brought back up, were written over the label of one of the 844 disks. This is like a problem we had in the past which was supposedly corrected. | N.A. |
| 770113 | Three crashes were caused by erroneous code in PP program 1TA relating to performance measurement. Some code was being written over, then executed. | Fixed |
| 770119 | A TELEX terminal was in a strange state with last operation on the T Display unrecognizable. The data "5B PUNCHEBPUNCHBEBP8" appeared at the system message area. The latter, perhaps a queue file table, has appeared at system in the past. | DDT-13 |
| 770123 | 844 disk channel 6 hung on a function time-out error. This happens about once each month and is thought to be a hardware problem. | DDT-12 |